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EXAMINER

CAO, DIEM K

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2126

12

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/468,614

Applicant(s)

SINHA ET AL.

Examiner

Diem K Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to the Amendment filed on 6/9/2003.
2. Claims 1-10 and 13-28 remain in the application. Applicant has amended claims 1, 10, 17, 22, 24-26 and cancelled claims 11-12.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10, 13-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley (U.S. 5,828,882) in view of Corrington et al. (U.S. 6,076,142).

As to claim 1, Hinckley teaches (col. 4, lines 39-56) registering (registration request 102) the management application (program 104) with an event application programming interface (event notification facility 100 includes a program interface 102), detecting occurrence of an event (event detection hardware and/or software), notifying the management application of the event via the event application programming interface (event manager perform ... of the program). Hinckley also suggests the system can be utilized with a variety of operating systems, events and programs (col. 6, lines 29-41).

However, Hinckley does not teach an operating system module to interface with a RAID device controller that comprises an I/O processor, detecting occurrence of an event of the I/O processor with a RAID monitor service operating above the operating system module.

Corrington teaches an operating system module to interface with a RAID device controller (the

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RAID system 10 ... a RAID controller; col. 5, lines 35-59 and the RAID system is coupled to the host computer system 12; col. 4, lines 61-65), and detecting (monitor) occurrence of an event from a RAID controller (status and failures of the components) with the RAID monitor service (ICU Module and Monitor Utility; col. 11, line 41 – col. 12, line 13 and Fig. 2, col. 5, lines 9-34). “Official Notice” is taken that a RAID device controller comprising I/O processor is well known and implemented in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley bases on suggestion of Hinckley because it would provide the user the options to check and correct the RAID system events (col. 2, lines 38-63).

As to claim 2, Hinckley as modified by Corrington teaches (col. 4, lines 39-56) updating the event application programming interface (When an event 110 occurs, ... to an event manager 118) with the RAID monitor service upon occurrence of the event (event interface 116 connected to event detection hardware and/of software).

As to claim 3, Hinckley does not explicitly teach registering includes identifying a storage medium associated with the event. Hinckley teaches event type is registered with the event notification facility (col. 4, lines 39-56). It would have been obvious to modify the system of Hinckley to identify the storage medium associated with the event when the system is utilized to monitor the RAID device because it provides the method to fix the failed storage medium.

As to claim 4, Hinckley teaches registering the management application includes identifying the type of event (Each entry of an event table ... type of event 110; col. 4, lines 39-56).

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As to claim 5, Hinckley teaches registering the management application includes providing the event application programming interface with a callback function (handler routine; col. 4, line 39 – col. 5, line 17).

As to claim 6, Hinckley teaches (col. 4, lines 39-56) the event application programming interface (event manager 118) use the callback function to (handler routine 108) notify the management application (program 104) of the occurrence of the event (event 110 occurs).

As to claim 7, Hinckley teaches creating an interprocess communication between the RAID monitor service and the management application (event detected by the monitor service is notified to the management application; col. 4, lines 39-67).

As to claim 9, Hinckley teaches (col. 4, lines 39-56) the event application programming interface (event notification facility 100, event manager 118) returns (performs a procedure call) a callback function (handler routine 108) upon notification of the event (when an event 110 occurs).

As to claim 10, Hinckley teaches (col. 4, lines 39-56) registering (registration request 102) the application (program 104) with a programming interface (event notification facility 100 includes a program interface 102), detecting occurrence of a hardware event (event, variety type of events) with a monitor service (event detection hardware/software) that operates above the operating system module and that is separate from the programming interface (the event notification facility operates above the operating system), notifying the management application of the event via the event application programming interface (event manager perform ... of the program). Hinckley also suggests the system can be utilized with a variety of operating systems, events and programs (col. 6, lines 29-41).

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Hinckley teaches registering application including registering the event type (col. 4, lines 39-67). However, Hinckley does not teach an operating system module to interface with a device, and registering the application includes storing data identifying an input/output processor that monitors the device. Corrington teaches an operating system module to interface with a device (the RAID system 10 ... a RAID controller; col. 5, lines 35-59 and the RAID system is coupled to the host computer system 12; col. 4, lines 61-65), and detecting (monitor) occurrence of an event from a RAID controller (status and failures of the components). "Official Notice" is taken that a RAID device controller comprising I/O processor is well known and implemented in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley bases on suggestion of Hinckley because it would provide the user the options to check and correct the RAID system events (col. 2, lines 38-63).

As to claim 13, Hinckley as modified teaches storing data identifying the hardware event (Each entry of the event table 200 corresponds to a type of event 110; col. 4, lines 60-65).

As to claim 14, Hinckley as modified does not explicitly teach storing a hardware identification value that identifies a storage medium associated with the event. Hinckley as modified teaches storing data identifying the hardware event (Each entry of the event table 200 corresponds to a type of event 110; col. 4, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the system of Hinckley would have to store the hardware identification value that identifies a storage medium because it

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provides the application with needed information related to the event in order to process that event (col. 9, lines 39-50).

As to claim 15, Hinckley teaches notifying the programming interface of the occurrence of the event with a monitor (event manager perform ... of the program; col. 4, lines 39-56). However, Hinckley does not teach detecting occurrence of an event from a RAID with the RAID monitor service. Corrington teaches (col. 11, lines 41 – col. 12, lines 13) detecting (monitor) occurrence of a hardware event from a RAID (status and failures of the driver) with the RAID monitor service (ICU Module and Monitor Utility). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Corrington to the system of Hinckley because it would provide the user a method to check and correct the RAID system events (col. 2, lines 38-63).

As to claim 16, Hinckley teaches notifying the application includes providing a callback function (handler routine; col. 4, lines 51-56).

As to claim 17, see rejection of claim 1 above.

As to claim 19, Hinckley as modified by Corrington teaches notify the management application of a hardware event (When an event occurs ... the program; col. 4, lines 39-56).

As to claim 20, Hinckley does not explicitly teach the hardware event is selected from the group consisting of a disk drive failure, disk drive initialization, array migration, and data recovery. Corrington teaches (col. 5, line 9 – col. 6, line 65) the hardware event is selected from a group consisting of a disk drive failure (drive module failure occurs), disk drive initialization (create RAID set), array migration (designate spare drives), and data recovery (rebuild failed drive). It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to apply the teaching of Corrington to the system of Hinckley so it can monitor and process the status of the RAID system (col. 5, lines 60-67).

As to claim 21, refer to claim 12 above for rejection.

As to claim 22, it is rejected under the same ground of claim 10.

As to claim 23, Hinckley teaches there are multiple management applications (col. 3, lines 19-35), and also suggests the system can be utilized with a variety of operating systems, events and programs (col. 6, lines 29-41). However, Hinckley does not teach the management application is selected from the group consisting of a desktop management program, a RAID system management application, and a RAID monitor application. Corrington teaches a RAID monitor application. It is obvious there are many programs to monitor the RAID system and any one of them could work with the system of Hinckley.

As to claim 24, Hinckley does not teach a RAID device and a RAID monitor device. Corrington teaches (col. 11, lines 41 – col. 12, lines 13) a RAID device (RAID) and a RAID monitor device (ICU Module and Monitor Utility). It would have been obvious to apply the teaching of Corrington to the system of Hinckley because it provides a method to utilize the system of Hinckley to monitor the RAID system.

As to claim 25, Hinckley does not teach an intelligent input/output controller to interface with the RAID device, and the intelligent input/output controller comprises the I/O processor. Corrington teaches an intelligent input/output controller to interface with the RAID device (The RAID system ... a RAID controller, removable and hot swappable drive modules 14; col. 5, lines 9-59 and Fig. 2). "Official Notice" is taken that a RAID device controller comprising I/O processor is well known and implemented in the art. It would have been obvious to apply the

teaching of Corrington to the system of Hinckley because the advantage of I/O controller is well known and implemented in the system of RAID.

As to claim 26, it is rejected under the same ground of claim 1.

As to claim 27, Hinckley teaches (col. 4, lines 39-56) registering (registration request 102) the management application (program 104) with an event application programming interface (event notification facility 100 includes a program interface 102).

As to claim 28, Hinckley teaches (col. 4, line 39 – col. 5, line 40) instructions that cause the processor to provide the function of the event programming interface (The event notification ... connected to event detection hardware and/or software).

5. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinckley (U.S. 5,828,882) in view of Corrington et al. (U.S. 6,076,142) further in view of Skarbo et al. (U.S. 5,805,886).

As to claims 8 and 18, Hinckley does not explicitly teach unregistering the management application with the event application programming interface. Skarbo teaches (col. 7, lines 40-45) unregistering (unregister) the management application (communication application) with the event application programming interface (address book). It would have been obvious to one of the ordinary skill in the art to apply the teaching of Skarbo to the system of Hinckley because it would provide the management application a way to unregister itself when it doesn't interesting in event notification.

Response to Arguments

6. Applicant's arguments, see page 8, lines 8-22, filed 6/9/2003, with respect to the rejection(s) of claim(s) 1, 10, and 12 under 35 USC 103 have been fully considered and are

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persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of different interpretation of the previously applied reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diem K Cao whose telephone number is (703) 305-5220. The examiner can normally be reached on Monday - Thursday, 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6296 for regular communications and (703) 305-9731 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Or fax to:

- AFTER-FINAL faxes must be signed and sent to (703) 746-7238.
- OFFICIAL faxes must be signed and sent to (703) 746-7239.
- NON-OFFICIAL/DRAFT faxes should not be signed, please send to (703) 746-7140.

Diem Cao
August 8, 2003



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